USER MANUAL

Cooler saturator
Carbo-chill 100

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General information

This manual is valid for the cooler saturator “Carbo-chill 100”.
This device is intended for cooling and carbonation of drinking water.

When buying the device you should check its operability, complete set, absence of mechanical damages, stamps and date of sale.

Please keep this manual in a safe place.

Before putting the device into operation read manual carefully.

Notes and Cautions!

Throughout the manual cautions and notes are written in bold like the example below:

Don't turn the unit upside down or place it at one of the sides.

Explanation

Symbol	Meaning	Explanation
	Note	The operator should observe and/or act according to the information in order to obtain the best possible function of the equipment.
	Caution	The operator must observe and/or act according to the information in order to avoid any mechanical or electrical damage to the equipment or any personnel injury.

Installation

• It is the responsibility of the owner and operator/s of this equipment that the installation is made in accordance with local regulations and safety requirements.
• Service and repair must be performed only by service technicians who are trained in servicing the equipment. The installation procedure and requirements are described further this manual.
• The manufacturer cannot be responsible for any damage caused by incorrect installation of this cooler.
• The unit must be installed and connected in the ventilated place with nothing placed at least 50 cm distance from both sides of the unit.

Repair and maintenance of the closed system for refrigerant and handling of refrigerants must be done only by a company authorized in handling refrigerants.

Part 1: Technical specifications

Name of characteristic	Unit	Nominal
Nominal voltage	V	115
Frequency	Hz	60
Current consumption, not less	A	4,5
Operating temperatures	ºC	18 - 32
Refrigerant R 134a	kg	0,140
	lb	0,309
Net weigh	kg	34
Dimensions (without package), not less Width	mm	339
Length		477
Height		477
Cooler capacity at Δt*= 16 0C	l/h	40
Water tank capacity, not less	l	10,5
Ice bank	kg	4,4
Ice forming at water t° = 24 °C	h	2
Minimal outlet temperature	ºC	2-6
Number of coils	it	1
Compressor power	HP	1/4
Compressor cooling capacity t° = - 10 °C	W	432
t_k = + 45 °C	kkal/h	371
Carbonator pump: capacity	l/h	318
capacity at 6,9 bar		192
Submersible pump: capacity	l/h	870
Water lifting	m	1,1

Δt* - the difference between inlet and outlet water or soft drinks temperature

Part 2: Functional description

Cooling device

Cooler is a metallic construction of a box type with detachable walls and removable cover.
On the front side of the cooler body are:

- switch of the cooler;
- indicator lamp water level of carbonator bowl;
- fittings for connecting of the tap water and CO2 cylinder;
- digital thermometer display for a visual control of the water temperature in the bath;
- fittings for connecting of the flowing cooled water and cooled saturated water;

Inside of the cooler body are:

- refrigerating unit of a compressive type for the water cooling, component parts of which are compressor, air condenser, filter-dehydrator, evaporator, interconnected by the copper pipes through the soldered connections, forming the sealed system filled with the ozone-friendly refrigerant- R134a.
- plastic bath isolated outside by the heat insulation from polyurethane foam and in which there are evaporator, heat-exchanger, carbonator bowl, mechanical thermostat sensor serving to maintain a defined thickness of the ice in the bath, submersible pump.
- carbonator pump.

The functioning of the cooler is based on the principle that the vapors of the coolant, boiling in the refrigerating unit evaporator, take the heat away from the water in the bath necessary for its boiling. Being cooled the water turns into the ice on the evaporator tubes. The thickness of the ice field is controlled by the position sensor thermostat mounted on the evaporator coils. The thermostat should be set to position "7".
While pouring the water becomes cooled passing through the heat exchanger and saturated with carbon dioxide in the bulb-carbonator. The water temperature at the outlet depends upon its temperature at the inlet to the heat exchanger. While the water pouring the ice field runs out. After the complete exhaustion of the ice field the water temperature at the outlet begins to rise (if the thermometer shows the temperature higher than 40F, it is not recommended to pour the saturated water because the degree of carbonization sharply diminishes).

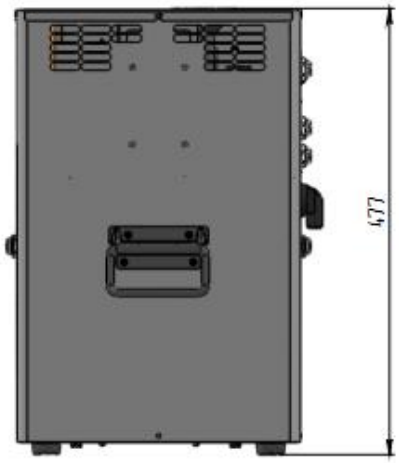
The hydraulic circuit saturator includes bypass line, the main element is a valve. Change the position of the valve is not recommended, because it is configured for a given pressure of carbonization (up to 3 bar).

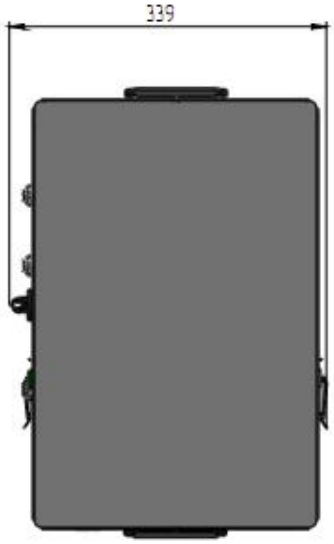
Start up

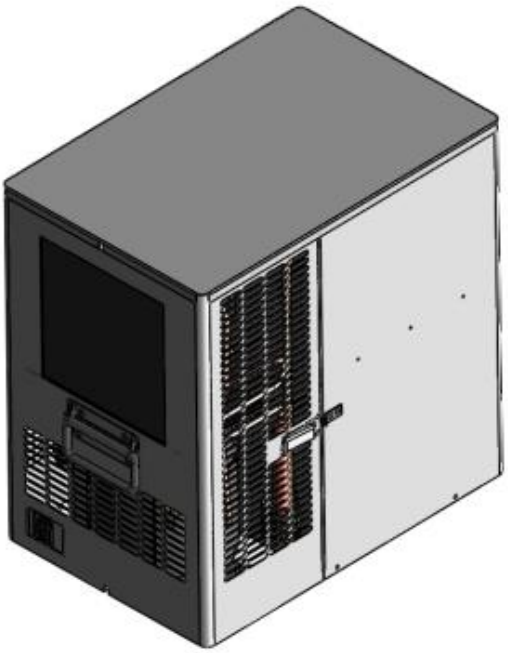
Before starting up the equipment, make installation according to the descriptions in Part 3 of this manual.

The optimum temperature range for cooling operation is from 18 to 32 ºC. The cooler should be located in a spot with a very good air circulation. In event of the cooler relocation from a cold place to a warm one, the cooler may be switched on in no less than 1,5 – 2 hours.

Part 3: Installation







Don’t turn the unit upside down or place it at one of the sides. If the unit has by accident been turned upside down, it must rest for 4 hours before starting it.

Unpacking

Think about possible re-use of packaging material. Carefully unpack the cooler unit - do not turn it upside down - and check that all parts are in good condition.

The inner lid and removable strap attached cooler self-tapping screws. Screws are the transfer and can not be re-threading.

Tools

Standard tools are sufficient.

Placement and installation

For more effective power consumption we recommend to place the cooler far from heat sources and in dry, ventilated facilities.

The cooler should be mounted on the firm and flat horizontal basis.

Air condenser and venting grids of the cooler should be always free for air access and circulation.

Minimal distance from venting grids to the cooler walls or barriers should be 20 cm.

Check compliance of power indexed at the cooler label with current power.

Check the electrical wiring for any possible insulation defects, absence of current-carrying parts locking.

Insert the plug of the cooler into the plug socket with earthing.

Working order

1) To fill the cooler bathtub with the water (depending on the fulfillment through the neck of the lid, through a removable strip on the inner lid), until it rises to the overflow level.
2) To connect the output lines of the cooled water and cooled carbonized water to the column (it is necessary to connect both lines);
3) To connect the cooler to the CO2 cylinder with the pressure at the manometer in 3 bar (the maximum pressure of the carbonic acid supplied to the cooler should not exceed 3 bar).
4) To connect the cooler to the water supply. For normal work of the cooler the tap water pressure should be in the range 2-3 bar. Previously you can use the filter for the tap water cleaning.
5) To check the position of the thermostat (must be set to "7").
6) To check the connection of the submersible pump and carbonization pump.
7) To connect the device into the network.
8) To switch the cooler on (a green button on the front panel).
9) Filling begin after the formation of ice bank (2 hours at ambient temperature 24 °C).
10) The optimum temperature for the saturation is 31 – 40F (the temperature value is shown on the display of the electronic thermometer on the device front panel). If you exceed this temperature was chilled bottled water saturated is not recommended.

Safety requirements

The cooler has the first class power safety (including earthing).

Before connection of the cooler to power grid make sure that:
- Parameters supply main is nominal: 115V, 60Hz;
- Power cable and plug are not damaged.

The cooler should be connected with power grid only with earthing. Check it before starting the installation process.

With the advent of signs of wiring locking (coverlet tingling while touching the metal parts of the cooler) the Customer should disconnect the cooler from the power grid and call for the technician for defects elimination.

The Customer should not use the cooler in facilities of high danger level with one or several conditions of the following:

- deviation from nominal voltage 115 V over the allowed range: + 10% - 15%. ;
- extra dampness or dust (air humidity is more than 80%, when ceiling, walls, floor and other things in the room are covered with moisture);
- air temperature is above 32 ºC;
- chemically active medium, which critically influents on electric insulation and current-carrying parts of electric equipment;
- current-carrying floors.

The Customer should not touch the frame of running coolers.

The coolers should be disconnected from the power grid only within the following reasons:

- Sanitary processing;
- Replacement of the cooler;
- Other operations connected with servicing of cooler

In case of network cord damage and to avoid the danger of current injury the Customer should not make the cord replacement by himself but call for the technical specialist.

The Producer is not responsible for possible damages the personnel or equipment in case of ignoring of above mentioned requirements.

Air inlet

For efficient operation, free space around the unit must be min. 20 cm.
All air inlets/outlets on the unit must not be blocked by waste chemical containers etc.

It is of upmost importance to ensure free circulation of air around the cooler. Otherwise the unit will be too hot which consequently will result in reduced efficiency and risk of unnecessary operating problems.

Installation site

• This cooler unit is for indoor and outdoor installation.

Electrical installation

Installation should be made according to local regulations.

Please see the Electrical Diagram in the Appendix A.

Part 4: Cleaning and maintenance

General

Always unplug the unit from power supply before carrying out any cleaning or maintenance procedures etc.
Repair and maintenance of the closed system for refrigerant and handling of refrigerants must be done only by a company authorized in handling refrigerants.
Never use any other refrigerants than specified for this unit.
Refrigerant type is specified in Part 1.

Never turn the unit upside down or place it on one of the sides. If the unit by accident has been turned upside down, let it rest 4 hours before starting it.

The cooler unit is designed to operate with minimum of maintenance. Following the directions in this chapter will ensure that your equipment will operate efficiently. Performing cleaning and maintenance on a schedule basis minimizes the chance of equipment failure and loss of processing quality.

The cleaning of inside and outside surfaces of the cooler should be provided as required but not rare than once per month. Pull the plug out of the socket before starting the cleaning.

Monthly

• Make sure to switch off/disconnect the power supply to the cooler unit.
• Clean all external surfaces using a moist cloth.
• Remove all dust and fluff from all of the ventilation slots and the condenser fins with a stiff (non-metal) brush. Vacuum the debris from the fins.

Care should be taken not to damage the fins of the condenser.

• Inspect visible parts for damage. If any damage is found that impedes normal operation, contact your local service centre.
• Visually check hoses and hose connections for leaks and damages. Tighten any loose connectors.
• After cleaning and inspection make sure that the cooler top cover is secured

Maintenance

To avoid increasing of consumed power and to provide its undisturbed operation the customer should follow these directions:

- do not block up the cooler frame, venting grids ensuring free air circulation;
- clean air condenser of dust and soiling;
- keep the cooler in clean condition.

If you need access to a modular bay to observe the following procedure:

1) Remove the screw that secures the lid.

2) Remove the screw connecting the removable side wall to the platform.

3) Open the latch and remove the wall.

Storage and Transportation

The cooler should be stored in the package.
The cooler should be stored in the dry ventilated facility with relative humidity not higher than 80%.

The cooler should be transported only in vertical position.

Storage without package.

The cooler should be stored in dry damp-proof facility. Stacking without package is forbidden.
The cooler should be transported in a package by any type of transport only in vertical position. It's not recommended to replace the cooler inside transport.

Part 5: Trouble Shooting

Before starting trouble shooting

If the cooler unit does not work according to the description in this manual, the following pages are meant as a help for you.
Read them carefully and find the paragraph that corresponds to your problem.

Always unplug the cooler unit from power supply before carrying out any repair, cleaning or maintenance procedures etc.

Never open the closed system with refrigerant. If necessary, this must be done only by a company authorized in handling refrigerants.

Always remember that the cooling unit requires air. Dirty or blocked condenser fins or aperture grills or lack of air space around the cooler can result in part or total failure of the unit.

Never turn the unit upside down or place it on one of its sides. If the unit by accident has been turned upside down, let it rest for 4 hours before starting it.

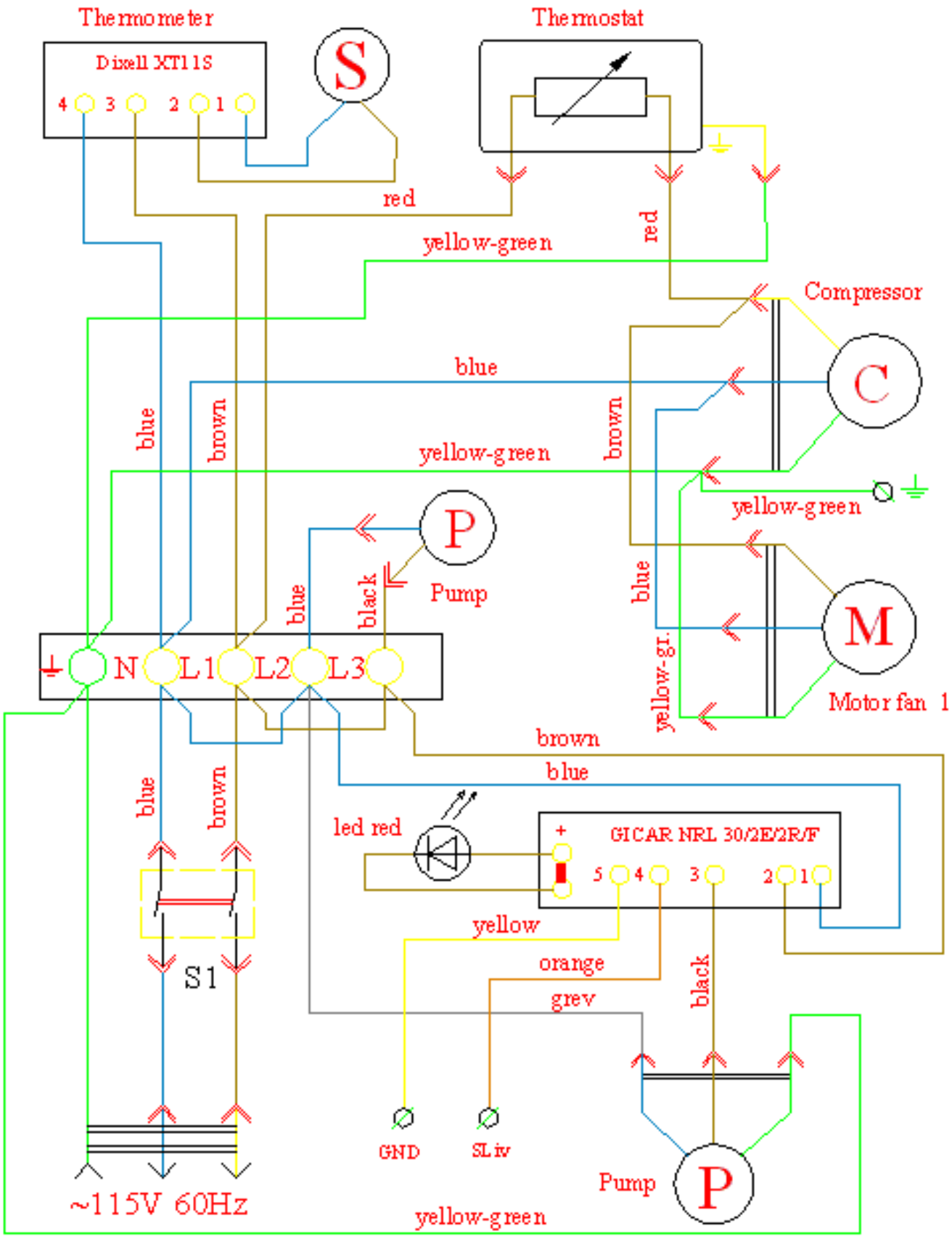
If the equipment should fail to function please check as suggested below and correct if possible.

Symptom	Probable Cause	Remedy
The cooler is connected with power but does not work.	There is no power in the main The plug is not fully connected with the socket The thermoregulator knob is fixed at «0» Refrigerant is not available in system. Refrigerant cannot pass through capillary. Compressor valve is out of order	Check the power in the socket by means of tester Check and provide plug's contact with the socket Fix the knob at extreme right position Call for the technician of service company.
Cooler cannot be started.	No voltage	Check mains voltage availability. Call for the technician of service company.
Compressor works continuously without switching. Product in the heat exchanger is overfrozen.	The temperature sensor is broken.	Call for the technician of service company.
Noise while cooler is running.	- Some part of the cooling unit contacts with the cooler frame. - Compressor mounting on shock damper is broken. - Fan baffles contact with the air condenser.	Call for the technician of service company
The indicator lamp of the water level is burning	No water in carbonator bowl Carbonation pump is not working The water is not being piped	Check the pump connection (plastic connector). Call for the technician of service company Check the connection of the water-pipe supply
Not enough carbonated water	Not fed carbon dioxide. Insufficient system pressure The water temperature is greater than 40F	Check the connection of carbon dioxide Look at the display thermometer. Stop pouring until the temperature will drop below 40F

Part 6: Spare Parts

	Part No.	**Specification**
1	"EMBRACO" NE 6160Z	Compressor
2	"LU-VE" STVF 75	Condenser
3	"Shurflo" 8035-963-239	Carbonator pump
4	Maxi-Jet 900	Submersible pump
5	"RANCO" K50H2005003	Thermostat
6	GICAR NRL30/2E/2R/F	Level controller
7	"Dixell" XT11S-4000N	Digital thermometer

Appendix A: Electrical Diagram



Appendix B: Wiring Diagram